

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF121113C11-1

**MODEL NO.:** VIP2502

**FCC ID:** ACQ-VIP2502

**RECEIVED:** Oct. 04, 2012

**TESTED:** Oct. 04 ~ Dec. 18, 2012(For all test items except  
Spurious Emissions (frequency range 30MHz~1GHz))  
Mar. 20, 2013 (For Spurious Emissions (frequency  
range 30MHz~1GHz))

**ISSUED:** Mar. 21, 2013

**APPLICANT:** Motorola Mobility, LLC.

**ADDRESS:** 101 Tournament Drive Horsham, PA 19044  
United States

**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

**LAB ADDRESS:** No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,  
New Taipei City, Taiwan, R.O.C.

**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei  
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF121113C11-1	Original release	Mar. 21, 2013

## 1. CERTIFICATION

**PRODUCT:** VIP2502 set top box

**MODEL:** VIP2502

**BRAND:** Motorola

**APPLICANT:** Motorola Mobility, LLC.

**TESTED:** Oct. 04 ~ Dec. 18, 2012 (For all test items except Spurious Emissions (frequency range 30MHz~1GHz))  
Mar. 20, 2013 (For Spurious Emissions (frequency range 30MHz~1GHz))

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)

ANSI C63.10-2009

The above equipment (model: VIP2502) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** :  , **DATE** : Mar. 21, 2013  
Pettie Chen / Senior Specialist

**APPROVED BY** :  , **DATE** : Mar. 21, 2013  
Ken Liu / Manager

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -4.97dB at 0.18125MHz.
15.407(b/1/2/3)(b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5350.00, 5470.00MHz.
15.407(a/1/2)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX not a standard connector.

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	VIP2502 set top box
<b>MODEL NO.</b>	VIP2502
<b>POWER SUPPLY</b>	12Vdc (Adapter)
<b>MODULATION TYPE</b>	64QAM, 16QAM, QPSK, BPSK
<b>MODULATION TECHNOLOGY</b>	OFDM
<b>TRANSFER RATE</b>	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 600.0Mbps
<b>OPERATING FREQUENCY</b>	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5580MHz & 5650 ~ 5700MHz
<b>NUMBER OF CHANNEL</b>	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5500 ~ 5700MHz: 7 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	49.727mW for 5180 ~ 5240MHz 246.031mW for 5260 ~ 5320MHz 245.399mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	5180 ~ 5240MHz: Dipole antenna with 0.1dBi gain 5260 ~ 5320MHz: Dipole antenna with 0.1dBi gain 5500 ~ 5700MHz: Dipole antenna with 0.8dBi gain
<b>ANTENNA CONNECTOR</b>	I-PEX
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Adapter

**NOTE:**

- The EUT provides four completed transmitters and four receivers.

MODULATION MODE	TX FUNCTION
802.11a	4TX
802.11n (20MHz)	4TX
802.11n (40MHz)	4TX

- The EUT has disabled the 5600-5650MHz band by S/W to avoid 5600-5650MHz band for FCC certification.

3. The EUT consumes power from the following adapters:

ADAPTER 1	
<b>BRAND</b>	LEADER ELECTRONICS INC.
<b>MODEL</b>	ML18-V120150-A1
<b>INPUT POWER</b>	120Vac, 60Hz, 0.5A
<b>OUTPUT POWER</b>	12Vdc, 1.5A
<b>POWER LINE</b>	1.5m non-shielded cable w/o core

ADAPTER 2	
<b>BRAND</b>	Asian Power Devices Inc.
<b>MODEL</b>	WB-18F12FU
<b>INPUT POWER</b>	110-120Vac, 50-60Hz, 0.6A Max.
<b>OUTPUT POWER</b>	12Vdc, 1.5A
<b>POWER LINE</b>	1.5m non-shielded cable w/o core

ADAPTER 3	
<b>BRAND</b>	LITEON
<b>MODEL</b>	PB-1180-1M01
<b>INPUT POWER</b>	100-132Vac~60Hz, 0.6A
<b>OUTPUT POWER</b>	12Vdc, 1.5A
<b>POWER LINE</b>	1.5m non-shielded cable w/o core

ADAPTER 4	
<b>BRAND</b>	DELTA Electronics, INC.
<b>MODEL</b>	ADP-18AR AA
<b>INPUT POWER</b>	110-120Vac, 57-63Hz, 0.8A
<b>OUTPUT POWER</b>	12Vdc, 1.5A
<b>POWER LINE</b>	1.5m non-shielded cable w/o core

\* Adapter 3 was the worst for the final tests.

4. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



### 3.2 DESCRIPTION OF TEST MODES

#### FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

#### FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

#### FOR 5500 ~ 5580MHz & 5670 ~ 5700MHz

7 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	116	5580 MHz
104	5520 MHz	136	5680 MHz
108	5540 MHz	140	5700 MHz
112	5560 MHz		

3 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	134	5670 MHz
110	5550 MHz		

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	-	-	√	-	Power form Adapter 1
B	-	-	√	-	Power form Adapter 2
C	√	√	√	√	Power form Adapter 3
D	-	-	√	-	Power form Adapter 4

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

**NOTE: 1.** The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.  
**2.** "-" means no effect.

#### **RADIATED EMISSION TEST (ABOVE 1GHz):**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).  
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
C	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
C	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
C	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
C	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
C	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
C	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
C	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
C	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
C	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0

#### **RADIATED EMISSION TEST (BELOW 1GHz):**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).  
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
C	802.11n (20MHz)	5180-5320	36 to 64	52	OFDM	BPSK	6.0
C	802.11n (20MHz)	5500-5700	100 to 140	116	OFDM	BPSK	6.0

### POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B, C, D	802.11n (20MHz)	5180-5320	36 to 64	52	OFDM	BPSK	6.0
A, B, C, D	802.11n (20MHz)	5500-5700	100 to 140	116	OFDM	BPSK	6.0

### ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
C	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
C	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
C	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
C	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
C	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
C	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
C	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
C	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
C	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0

### TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE <sub>≥</sub> 1G	23deg. C, 66%RH	120Vac, 60Hz	Cedric Wu
RE <sub>&lt;</sub> 1G	26deg. C, 77%RH	120Vac, 60Hz	Alan Wu
PLC	24deg. C, 64%RH 26deg. C, 62%RH	120Vac, 60Hz	Match Tsui Antony Lee
APCM	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui

### 3.3 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.



### 3.4 DESCRIPTION OF SUPPORT UNITS

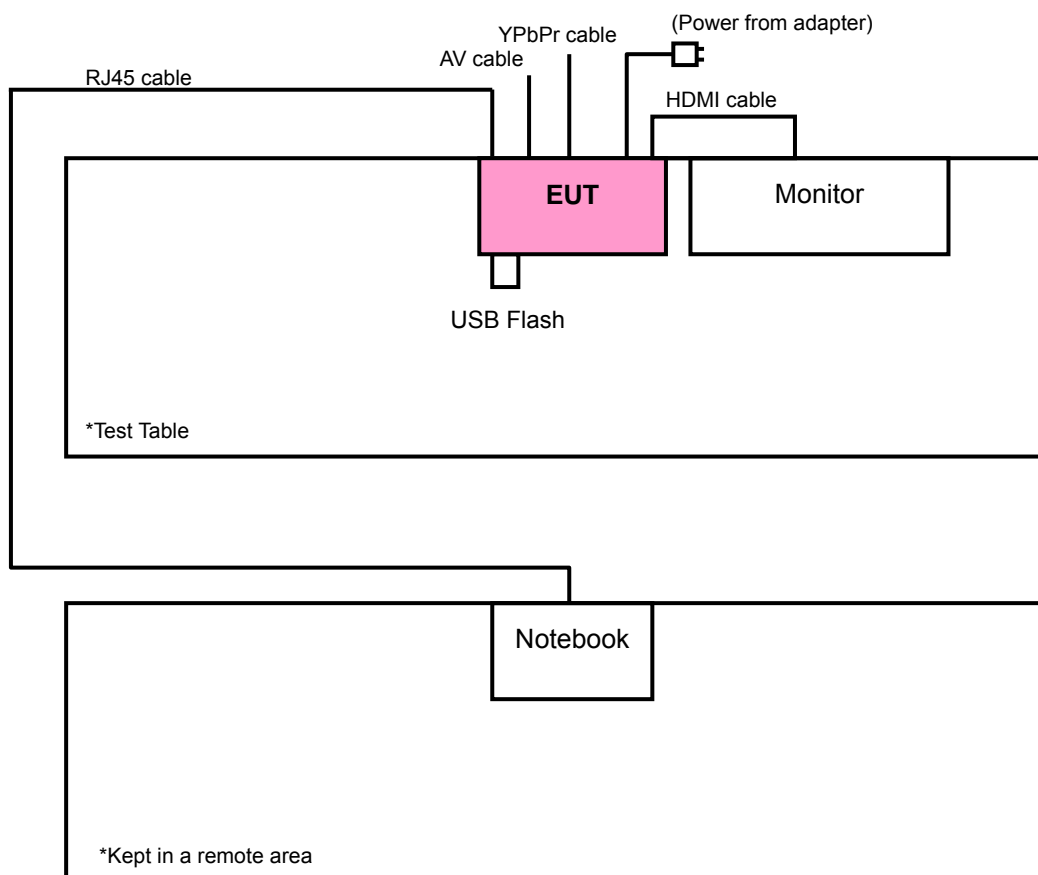
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Monitor	Panasonic	TH-L32E30W	12500043	FCC DoC Approved
2	Notebook	DELL	E5420	33MKMQ1	FCC DoC Approved
3	USB Flash	Transcend	V85	569992-8206	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5m HDMI cable
2	30m non-shielded RJ45 cable
3	NA

**NOTE:** 1. All power cords of the above support units are non shielded (1.8m).  
 2. Item 2 as a communication partner to transfer data.  
 3. HDMI cable was supplied from client.

### 3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**

**789033 D01 General UNII Test Procedures v01 r02**

**662911 D01 Multiple Transmitter Output v01 r02**

**ANSI C63.10-2009**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
√	FIELD STRENGTH AT 3m (dBμV/m)	
	PK	AV
	74	54
	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	PK	PK
	-27	68.3

**NOTE:** The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

#### 4.1.3 TEST INSTRUMENTS

**Tested Date: Oct. 04 ~ Dec. 18, 2012**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 21, 2012	Aug. 20, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	101261	Dec. 23, 2011	Dec. 22, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	9120D	209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01961	Oct. 29, 2011 Oct. 25, 2012	Oct. 28, 2012 Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10663	May 11, 2012	May 10, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 28, 2012	Aug. 27, 2013
Software ADT	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT	TT100.	TT93021704	NA	NA
Turn Table Controller ADT	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 29, 2011 Oct. 25, 2012	Oct. 28, 2012 Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0824011	Jul. 30, 2012	Jul. 29, 2013
Power Sensor	MA2411B	0738171	Jul. 30, 2012	Jul. 29, 2013

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 4.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC7450F-4.



**Tested Date: Mar. 20, 2013**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 21, 2012	Aug. 20, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Oct. 25, 2012	Oct. 24, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Dec. 22, 2012	Dec. 21, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8449B	3008A01961	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10738	Oct. 23, 2012	Oct. 22, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 28, 2012	Aug. 27, 2013
Software ADT	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT	TT100.	TT93021704	NA	NA
Turn Table Controller ADT	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 4.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC7450F-4.

#### 4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

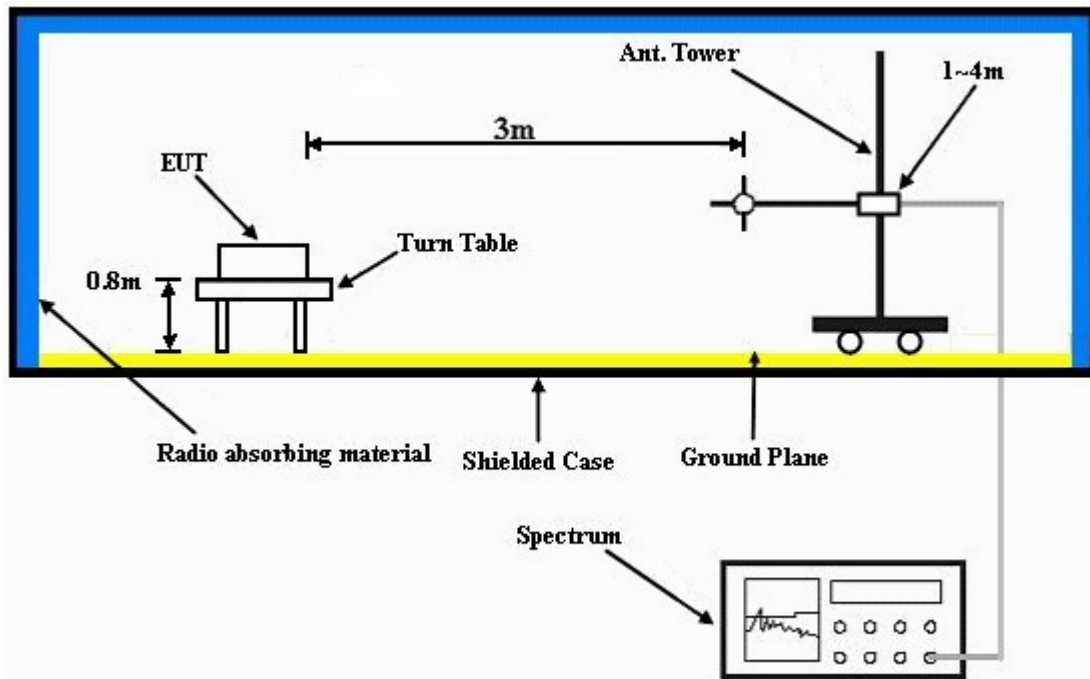
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.6 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.7 EUT OPERATING CONDITION

- Placed the EUT on the testing table.
- Prepared notebook to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

#### 4.1.8 TEST RESULTS

##### ABOVE 1GHz DATA:

##### 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.9 PK	74.0	-16.1	1.51 H	16	19.30	38.60
2	#5150.00	44.6 AV	54.0	-9.4	1.51 H	16	6.00	38.60
3	*5180.00	105.7 PK			1.55 H	25	67.10	38.60
4	*5180.00	94.8 AV			1.55 H	25	56.20	38.60
5	#10360.00	57.2 PK	74.0	-16.8	1.00 H	250	7.70	49.50
6	#10360.00	43.8 AV	54.0	-10.2	1.00 H	250	-5.70	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	56.9 PK	74.0	-17.1	1.00 V	170	18.30	38.60
2	#5150.00	45.9 AV	54.0	-8.1	1.00 V	170	7.30	38.60
3	*5180.00	113.5 PK			1.00 V	158	74.90	38.60
4	*5180.00	102.4 AV			1.00 V	158	63.80	38.60
5	#10360.00	57.2 PK	74.0	-16.8	1.00 V	150	7.70	49.50
6	#10360.00	44.9 AV	54.0	-9.1	1.00 V	150	-4.60	49.50

##### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.7 PK			1.59 H	25	66.10	38.60
2	*5200.00	93.8 AV			1.59 H	25	55.20	38.60
3	#10400.00	57.9 PK	74.0	-16.1	1.00 H	255	8.40	49.50
4	#10400.00	44.1 AV	54.0	-9.9	1.00 H	255	-5.40	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	114.8 PK			1.00 V	174	76.20	38.60
2	*5200.00	103.6 AV			1.00 V	174	65.00	38.60
3	#10400.00	58.4 PK	74.0	-15.6	1.00 V	155	8.90	49.50
4	#10400.00	46.0 AV	54.0	-8.0	1.00 V	155	-3.50	49.50

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.2 PK			1.54 H	24	66.50	38.70
2	*5240.00	94.5 AV			1.54 H	24	55.80	38.70
3	#5350.00	57.2 PK	74.0	-16.8	1.45 H	20	18.40	38.80
4	#5350.00	43.7 AV	54.0	-10.3	1.45 H	20	4.90	38.80
5	#10480.00	57.8 PK	74.0	-16.2	1.00 H	110	8.10	49.70
6	#10480.00	44.8 AV	54.0	-9.2	1.00 H	110	-4.90	49.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	113.7 PK			1.00 V	186	75.00	38.70
2	*5240.00	102.9 AV			1.00 V	186	64.20	38.70
3	#5350.00	57.9 PK	74.0	-16.1	1.15 V	152	19.10	38.80
4	#5350.00	45.0 AV	54.0	-9.0	1.15 V	152	6.20	38.80
5	#10480.00	58.5 PK	74.0	-15.5	1.20 V	140	8.80	49.70
6	#10480.00	45.1 AV	54.0	-8.9	1.20 V	140	-4.60	49.70

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	58.8 PK	74.0	-15.2	1.30 H	30	20.20	38.60
2	#5150.00	45.6 AV	54.0	-8.4	1.30 H	30	7.00	38.60
3	*5260.00	109.6 PK			1.40 H	25	70.90	38.70
4	*5260.00	99.2 AV			1.40 H	25	60.50	38.70
5	#10520.00	59.1 PK	74.0	-14.9	1.23 H	310	9.30	49.80
6	#10520.00	47.0 AV	54.0	-7.0	1.23 H	310	-2.80	49.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	59.5 PK	74.0	-14.5	1.00 V	194	20.90	38.60
2	#5150.00	47.3 AV	54.0	-6.7	1.00 V	194	8.70	38.60
3	*5260.00	118.5 PK			1.00 V	175	79.80	38.70
4	*5260.00	107.9 AV			1.00 V	175	69.20	38.70
5	#10520.00	62.4 PK	74.0	-11.6	1.36 V	228	12.60	49.80
6	#10520.00	51.1 AV	54.0	-2.9	1.36 V	228	1.30	49.80

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.1 PK			1.48 H	25	71.30	38.80
2	*5300.00	99.3 AV			1.48 H	25	60.50	38.80
3	#10600.00	59.0 PK	74.0	-15.0	1.21 H	304	9.00	50.00
4	#10600.00	46.0 AV	54.0	-8.0	1.21 H	304	-4.00	50.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	118.6 PK			1.09 V	186	79.80	38.80
2	*5300.00	108.0 AV			1.09 V	186	69.20	38.80
3	#10600.00	63.1 PK	74.0	-10.9	1.37 V	202	13.10	50.00
4	#10600.00	51.8 AV	54.0	-2.2	1.37 V	202	1.80	50.00

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.





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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.0 PK			1.48 H	45	70.20	38.80
2	*5320.00	97.9 AV			1.48 H	45	59.10	38.80
3	#5350.00	59.9 PK	74.0	-14.1	1.65 H	50	21.10	38.80
4	#5350.00	47.2 AV	54.0	-6.8	1.65 H	50	8.40	38.80
5	#10640.00	60.3 PK	74.0	-13.7	1.30 H	306	10.10	50.20
6	#10640.00	47.4 AV	54.0	-6.6	1.30 H	306	-2.80	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	118.2 PK			1.00 V	173	79.40	38.80
2	*5320.00	107.3 AV			1.00 V	173	68.50	38.80
3	#5350.00	64.7 PK	74.0	-9.3	1.07 V	175	25.90	38.80
4	#5350.00	52.5 AV	54.0	-1.5	1.07 V	175	13.70	38.80
5	#10640.00	65.5 PK	74.0	-8.5	1.37 V	202	15.30	50.20
6	#10640.00	51.3 AV	54.0	-2.7	1.37 V	202	1.10	50.20

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	57.6 PK	74.0	-16.4	1.30 H	45	18.60	39.00
2	#5460.00	45.1 AV	54.0	-8.9	1.30 H	45	6.10	39.00
3	#5470.00	60.3 PK	74.0	-13.7	1.45 H	39	21.30	39.00
4	#5470.00	45.7 AV	54.0	-8.3	1.45 H	39	6.70	39.00
5	*5500.00	108.5 PK			1.45 H	33	69.40	39.10
6	*5500.00	98.1 AV			1.45 H	33	59.00	39.10
7	#11000.00	59.2 PK	74.0	-14.8	1.00 H	320	7.60	51.60
8	#11000.00	45.8 AV	54.0	-8.2	1.00 H	320	-5.80	51.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	64.4 PK	74.0	-9.6	1.07 V	187	25.40	39.00
2	#5460.00	51.8 AV	54.0	-2.2	1.07 V	187	12.80	39.00
3	#5470.00	67.7 PK	74.0	-6.3	1.06 V	189	28.70	39.00
4	#5470.00	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.06 V</b>	<b>189</b>	<b>14.00</b>	<b>39.00</b>
5	*5500.00	118.7 PK			1.06 V	184	79.60	39.10
6	*5500.00	107.9 AV			1.06 V	184	68.80	39.10
7	#11000.00	64.8 PK	74.0	-9.2	1.16 V	259	13.20	51.60
8	#11000.00	51.6 AV	54.0	-2.4	1.16 V	259	0.00	51.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	108.4 PK			1.20 H	34	69.20	39.20
2	*5580.00	98.0 AV			1.20 H	34	58.80	39.20
3	#11160.00	58.5 PK	74.0	-15.5	1.00 H	305	7.20	51.30
4	#11160.00	45.3 AV	54.0	-8.7	1.00 H	305	-6.00	51.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	118.4 PK			1.03 V	180	79.20	39.20
2	*5580.00	108.0 AV			1.03 V	180	68.80	39.20
3	#11160.00	62.8 PK	74.0	-11.2	1.16 V	255	11.50	51.30
4	#11160.00	49.7 AV	54.0	-4.3	1.16 V	255	-1.60	51.30

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	109.4 PK			1.00 H	172	69.90	39.50
2	*5700.00	99.2 AV			1.00 H	172	59.70	39.50
3	#5725.00	58.2 PK	74.0	-15.8	1.00 H	189	18.70	39.50
4	#5725.00	46.0 AV	54.0	-8.0	1.00 H	189	6.50	39.50
5	#11400.00	60.0 PK	74.0	-14.0	1.00 H	303	8.40	51.60
6	#11400.00	46.8 AV	54.0	-7.2	1.00 H	303	-4.80	51.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	119.3 PK			1.00 V	162	79.80	39.50
2	*5700.00	109.0 AV			1.00 V	162	69.50	39.50
3	#5725.00	63.9 PK	74.0	-10.1	1.00 V	178	24.40	39.50
4	#5725.00	52.4 AV	54.0	-1.6	1.00 V	178	12.90	39.50
5	#11400.00	61.3 PK	74.0	-12.7	1.21 V	254	9.70	51.60
6	#11400.00	49.6 AV	54.0	-4.4	1.21 V	254	-2.00	51.60

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

# 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.2 PK	74.0	-16.8	1.45 H	27	18.60	38.60
2	#5150.00	44.9 AV	54.0	-9.1	1.45 H	27	6.30	38.60
3	*5180.00	105.5 PK			1.56 H	28	66.90	38.60
4	*5180.00	94.5 AV			1.56 H	28	55.90	38.60
5	#10360.00	57.9 PK	74.0	-16.1	1.00 H	245	8.40	49.50
6	#10360.00	44.2 AV	54.0	-9.8	1.00 H	245	-5.30	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	58.0 PK	74.0	-16.0	1.00 V	7	19.40	38.60
2	#5150.00	44.6 AV	54.0	-9.4	1.00 V	7	6.00	38.60
3	*5180.00	113.3 PK			1.00 V	30	74.70	38.60
4	*5180.00	102.4 AV			1.00 V	30	63.80	38.60
5	#10360.00	58.0 PK	74.0	-16.0	1.00 V	100	8.50	49.50
6	#10360.00	45.0 AV	54.0	-9.0	1.00 V	100	-4.50	49.50

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. “#”:The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	105.1 PK			1.57 H	26	66.50	38.60
2	*5200.00	93.9 AV			1.57 H	26	55.30	38.60
3	#10400.00	57.8 PK	74.0	-16.2	1.00 H	250	8.30	49.50
4	#10400.00	44.0 AV	54.0	-10.0	1.00 H	250	-5.50	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	113.6 PK			1.00 V	173	75.00	38.60
2	*5200.00	102.9 AV			1.00 V	173	64.30	38.60
3	#10400.00	59.2 PK	74.0	-14.8	1.00 V	110	9.70	49.50
4	#10400.00	45.7 AV	54.0	-8.3	1.00 V	110	-3.80	49.50

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. “#”:The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.6 PK			1.70 H	27	66.90	38.70
2	*5240.00	94.6 AV			1.70 H	27	55.90	38.70
3	#5350.00	58.5 PK	74.0	-15.5	1.55 H	15	19.70	38.80
4	#5350.00	44.5 AV	54.0	-9.5	1.55 H	15	5.70	38.80
5	#10480.00	58.0 PK	74.0	-16.0	1.00 H	260	8.30	49.70
6	#10480.00	44.8 AV	54.0	-9.2	1.00 H	260	-4.90	49.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	113.6 PK			1.00 V	185	74.90	38.70
2	*5240.00	103.4 AV			1.00 V	185	64.70	38.70
3	#5350.00	59.0 PK	74.0	-15.0	1.07 V	174	20.20	38.80
4	#5350.00	46.5 AV	54.0	-7.5	1.07 V	174	7.70	38.80
5	#10480.00	58.1 PK	74.0	-15.9	1.00 V	120	8.40	49.70
6	#10480.00	45.0 AV	54.0	-9.0	1.00 V	120	-4.70	49.70

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.3 PK	74.0	-16.7	1.45 H	45	18.70	38.60
2	#5150.00	44.5 AV	54.0	-9.5	1.45 H	45	5.90	38.60
3	*5260.00	109.4 PK			1.52 H	48	70.70	38.70
4	*5260.00	98.0 AV			1.52 H	48	59.30	38.70
5	#10520.00	60.3 PK	74.0	-13.7	1.32 H	308	10.50	49.80
6	#10520.00	47.3 AV	54.0	-6.7	1.32 H	308	-2.50	49.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	59.1 PK	74.0	-14.9	1.05 V	172	20.50	38.60
2	#5150.00	47.3 AV	54.0	-6.7	1.05 V	172	8.70	38.60
3	*5260.00	118.2 PK			1.00 V	172	79.50	38.70
4	*5260.00	106.0 AV			1.00 V	172	67.30	38.70
5	#10520.00	65.1 PK	74.0	-8.9	1.39 V	203	15.30	49.80
6	#10520.00	50.6 AV	54.0	-3.4	1.39 V	203	0.80	49.80

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	108.9 PK			1.50 H	25	70.10	38.80
2	*5300.00	97.8 AV			1.50 H	25	59.00	38.80
3	#10600.00	60.4 PK	74.0	-13.6	1.22 H	306	10.40	50.00
4	#10600.00	45.6 AV	54.0	-8.4	1.22 H	306	-4.40	50.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	118.1 PK			1.10 V	188	79.30	38.80
2	*5300.00	106.2 AV			1.10 V	188	67.40	38.80
3	#10600.00	65.4 PK	74.0	-8.6	1.30 V	202	15.40	50.00
4	#10600.00	50.8 AV	54.0	-3.2	1.30 V	202	0.80	50.00

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.6 PK			1.52 H	49	70.80	38.80
2	*5320.00	97.2 AV			1.52 H	49	58.40	38.80
3	#5350.00	59.7 PK	74.0	-14.3	1.50 H	2	20.90	38.80
4	#5350.00	46.9 AV	54.0	-7.1	1.50 H	2	8.10	38.80
5	#10640.00	59.7 PK	74.0	-14.3	1.30 H	307	9.50	50.20
6	#10640.00	47.3 AV	54.0	-6.7	1.30 H	307	-2.90	50.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	118.0 PK			1.00 V	172	79.20	38.80
2	*5320.00	106.3 AV			1.00 V	172	67.50	38.80
3	#5350.00	67.0 PK	74.0	-7.0	1.19 V	148	28.20	38.80
4	#5350.00	53.0 AV	54.0	-1.0	1.19 V	148	14.20	38.80
5	#10640.00	66.0 PK	74.0	-8.0	1.35 V	228	15.80	50.20
6	#10640.00	50.8 AV	54.0	-3.2	1.35 V	228	0.60	50.20

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	60.1 PK	74.0	-13.9	1.16 H	37	21.10	39.00
2	#5460.00	47.0 AV	54.0	-7.0	1.16 H	37	8.00	39.00
3	#5470.00	64.9 PK	74.0	-9.1	1.16 H	37	25.90	39.00
4	#5470.00	48.6 AV	54.0	-5.4	1.16 H	37	9.60	39.00
5	*5500.00	108.4 PK			1.13 H	37	69.30	39.10
6	*5500.00	97.5 AV			1.13 H	37	58.40	39.10
7	#11000.00	63.5 PK	74.0	-10.5	1.00 H	39	11.90	51.60
8	#11000.00	49.6 AV	54.0	-4.4	1.00 H	39	-2.00	51.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	62.6 PK	74.0	-11.4	1.08 V	352	23.60	39.00
2	#5460.00	50.7 AV	54.0	-3.3	1.08 V	352	11.70	39.00
3	#5470.00	71.1 PK	74.0	-2.9	1.05 V	350	32.10	39.00
4	#5470.00	52.9 AV	54.0	-1.1	1.05 V	350	13.90	39.00
5	*5500.00	117.9 PK			1.04 V	358	78.80	39.10
6	*5500.00	107.1 AV			1.04 V	358	68.00	39.10
7	#11000.00	64.1 PK	74.0	-9.9	1.52 V	193	12.50	51.60
8	#11000.00	49.9 AV	54.0	-4.1	1.52 V	193	-1.70	51.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	109.0 PK			1.00 H	173	69.80	39.20
2	*5580.00	97.3 AV			1.00 H	173	58.10	39.20
3	#11160.00	61.6 PK	74.0	-12.4	1.00 H	115	10.30	51.30
4	#11160.00	49.0 AV	54.0	-5.0	1.00 H	115	-2.30	51.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	118.6 PK			1.03 V	156	79.40	39.20
2	*5580.00	107.8 AV			1.03 V	156	68.60	39.20
3	#11160.00	63.5 PK	74.0	-10.5	1.11 V	251	12.20	51.30
4	#11160.00	50.8 AV	54.0	-3.2	1.11 V	251	-0.50	51.30

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	107.8 PK			1.00 H	356	68.30	39.50
2	*5700.00	96.6 AV			1.00 H	356	57.10	39.50
3	#5725.00	58.8 PK	74.0	-15.2	1.00 H	354	19.30	39.50
4	#5725.00	46.5 AV	54.0	-7.5	1.00 H	354	7.00	39.50
5	#11400.00	59.3 PK	74.0	-14.7	1.00 H	115	7.70	51.60
6	#11400.00	47.9 AV	54.0	-6.1	1.00 H	115	-3.70	51.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	118.5 PK			1.02 V	159	79.00	39.50
2	*5700.00	107.3 AV			1.02 V	159	67.80	39.50
3	#5725.00	67.9 PK	74.0	-6.1	1.00 V	177	28.40	39.50
4	#5725.00	52.5 AV	54.0	-1.5	1.00 V	177	13.00	39.50
5	#11400.00	60.3 PK	74.0	-13.7	1.20 V	251	8.70	51.60
6	#11400.00	48.7 AV	54.0	-5.3	1.20 V	251	-2.90	51.60

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

# 802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.3 PK	74.0	-16.7	1.42 H	48	18.70	38.60
2	#5150.00	44.3 AV	54.0	-9.7	1.42 H	48	5.70	38.60
3	*5190.00	100.9 PK			1.52 H	49	62.30	38.60
4	*5190.00	90.0 AV			1.52 H	49	51.40	38.60
5	#10380.00	56.4 PK	74.0	-17.6	1.00 H	300	6.90	49.50
6	#10380.00	44.1 AV	54.0	-9.9	1.00 H	300	-5.40	49.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	63.4 PK	74.0	-10.6	1.41 V	179	24.80	38.60
2	#5150.00	51.0 AV	54.0	-3.0	1.41 V	179	12.40	38.60
3	*5190.00	107.1 PK			1.12 V	180	68.50	38.60
4	*5190.00	96.7 AV			1.12 V	180	58.10	38.60
5	#10380.00	56.8 PK	74.0	-17.2	1.00 V	145	7.30	49.50
6	#10380.00	44.2 AV	54.0	-9.8	1.00 V	145	-5.30	49.50

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 66%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	100.8 PK			1.42 H	46	62.20	38.60
2	*5230.00	89.9 AV			1.42 H	46	51.30	38.60
3	#5350.00	57.0 PK	74.0	-17.0	1.40 H	46	18.20	38.80
4	#5350.00	44.1 AV	54.0	-9.9	1.40 H	46	5.30	38.80
5	#10460.00	58.1 PK	74.0	-15.9	1.00 H	310	8.50	49.60
6	#10460.00	44.3 AV	54.0	-9.7	1.00 H	310	-5.30	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.9 PK			1.51 V	178	68.30	38.60
2	*5230.00	94.8 AV			1.51 V	178	56.20	38.60
3	#5350.00	58.0 PK	74.0	-16.0	1.40 V	170	19.20	38.80
4	#5350.00	45.3 AV	54.0	-8.7	1.40 V	170	6.50	38.80
5	#10460.00	57.6 PK	74.0	-16.4	1.00 V	153	8.00	49.60
6	#10460.00	45.4 AV	54.0	-8.6	1.00 V	153	-4.20	49.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	55.8 PK	74.0	-18.2	1.40 H	40	17.20	38.60
2	#5150.00	44.3 AV	54.0	-9.7	1.40 H	40	5.70	38.60
3	*5270.00	107.5 PK			1.50 H	47	68.80	38.70
4	*5270.00	96.3 AV			1.50 H	47	57.60	38.70
5	#10540.00	58.3 PK	74.0	-15.7	1.25 H	300	8.50	49.80
6	#10540.00	44.6 AV	54.0	-9.4	1.25 H	300	-5.20	49.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5150.00	57.3 PK	74.0	-16.7	1.00 V	130	18.70	38.60
2	#5150.00	45.9 AV	54.0	-8.1	1.00 V	130	7.30	38.60
3	*5270.00	115.4 PK			1.23 V	182	76.70	38.70
4	*5270.00	104.7 AV			1.23 V	182	66.00	38.70
5	#10540.00	60.8 PK	74.0	-13.2	1.37 V	228	11.00	49.80
6	#10540.00	46.5 AV	54.0	-7.5	1.37 V	228	-3.30	49.80

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	104.7 PK			1.50 H	48	65.90	38.80
2	*5310.00	93.8 AV			1.50 H	48	55.00	38.80
3	#5350.00	58.2 PK	74.0	-15.8	1.39 H	48	19.40	38.80
4	#5350.00	45.0 AV	54.0	-9.0	1.39 H	48	6.20	38.80
5	#10620.00	58.2 PK	74.0	-15.8	1.00 H	309	8.10	50.10
6	#10620.00	44.9 AV	54.0	-9.1	1.00 H	309	-5.20	50.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	112.7 PK			1.09 V	181	73.90	38.80
2	*5310.00	101.5 AV			1.09 V	181	62.70	38.80
3	#5350.00	65.6 PK	74.0	-8.4	1.21 V	185	26.80	38.80
4	#5350.00	52.7 AV	54.0	-1.3	1.21 V	185	13.90	38.80
5	#10620.00	57.7 PK	74.0	-16.3	1.38 V	230	7.60	50.10
6	#10620.00	45.3 AV	54.0	-8.7	1.38 V	230	-4.80	50.10

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	56.5 PK	74.0	-17.5	1.19 H	358	17.50	39.00
2	#5460.00	43.9 AV	54.0	-10.1	1.19 H	358	4.90	39.00
3	#5470.00	59.2 PK	74.0	-14.8	1.19 H	358	20.20	39.00
4	#5470.00	46.4 AV	54.0	-7.6	1.19 H	358	7.40	39.00
5	*5510.00	104.0 PK			1.18 H	351	64.90	39.10
6	*5510.00	92.5 AV			1.18 H	351	53.40	39.10
7	#11020.00	60.4 PK	74.0	-13.6	1.00 H	99	8.90	51.50
8	#11020.00	45.5 AV	54.0	-8.5	1.00 H	99	-6.00	51.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5460.00	61.8 PK	74.0	-12.2	1.04 V	123	22.80	39.00
2	#5460.00	47.3 AV	54.0	-6.7	1.04 V	123	8.30	39.00
3	#5470.00	66.8 PK	74.0	-7.2	1.02 V	129	27.80	39.00
4	#5470.00	52.5 AV	54.0	-1.5	1.02 V	129	13.50	39.00
5	*5510.00	112.9 PK			1.06 V	181	73.80	39.10
6	*5510.00	101.3 AV			1.06 V	181	62.20	39.10
7	#11020.00	61.3 PK	74.0	-12.7	1.06 V	199	9.80	51.50
8	#11020.00	46.0 AV	54.0	-8.0	1.06 V	199	-5.50	51.50

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	105.6 PK			1.34 H	39	66.50	39.10
2	*5550.00	94.3 AV			1.34 H	39	55.20	39.10
3	#11100.00	63.9 PK	74.0	-10.1	1.00 H	190	12.60	51.30
4	#11100.00	48.3 AV	54.0	-5.7	1.00 H	190	-3.00	51.30
5	#16650.00	61.6 PK	74.0	-12.4	1.00 H	29	9.00	52.60
6	#16650.00	46.9 AV	54.0	-7.1	1.00 H	29	-5.70	52.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	114.4 PK			1.00 V	131	75.30	39.10
2	*5550.00	103.5 AV			1.00 V	131	64.40	39.10
3	#11100.00	65.0 PK	74.0	-9.0	1.24 V	209	13.70	51.30
4	#11100.00	49.3 AV	54.0	-4.7	1.24 V	209	-2.00	51.30
5	#16650.00	62.4 PK	74.0	-11.6	1.00 V	98	9.80	52.60
6	#16650.00	48.5 AV	54.0	-5.5	1.00 V	98	-4.10	52.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH	TESTED BY	Cedric Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	107.3 PK			1.36 H	87	67.90	39.40
2	*5670.00	95.3 AV			1.36 H	87	55.90	39.40
3	#5725.00	60.3 PK	74.0	-13.7	1.36 H	80	20.80	39.50
4	#5725.00	47.1 AV	54.0	-6.9	1.36 H	80	7.60	39.50
5	#11340.00	63.8 PK	74.0	-10.2	1.00 H	180	12.10	51.70
6	#11340.00	48.4 AV	54.0	-5.6	1.00 H	180	-3.30	51.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	114.6 PK			1.02 V	156	75.20	39.40
2	*5670.00	103.2 AV			1.02 V	156	63.80	39.40
3	#5725.00	65.5 PK	74.0	-8.5	1.00 V	2	26.00	39.50
4	#5725.00	52.1 AV	54.0	-1.9	1.00 V	2	12.60	39.50
5	#11340.00	64.6 PK	74.0	-9.4	1.24 V	208	12.90	51.70
6	#11340.00	48.7 AV	54.0	-5.3	1.24 V	208	-3.00	51.70

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

# BELOW 1GHz WORST-CASE DATA : 802.11n(20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 77%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.30	33.6 QP	40.0	-6.4	1.00 H	149	19.90	13.70
2	274.39	37.3 QP	46.0	-8.7	1.00 H	354	23.60	13.70
3	359.77	40.1 QP	46.0	-5.9	1.00 H	125	24.00	16.10
4	466.49	37.7 QP	46.0	-8.3	2.00 H	166	19.00	18.70
5	575.15	38.5 QP	46.0	-7.5	1.50 H	353	17.50	21.00
6	800.24	38.5 QP	46.0	-7.5	1.00 H	66	13.90	24.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	26.0 QP	40.0	-14.0	1.00 V	249	12.40	13.60
2	274.39	31.6 QP	46.0	-14.4	1.49 V	2	17.90	13.70
3	350.07	37.3 QP	46.0	-8.7	1.24 V	199	21.50	15.80
4	600.38	37.7 QP	46.0	-8.3	1.00 V	305	16.20	21.50
5	800.24	37.5 QP	46.0	-8.5	1.24 V	143	12.90	24.60
6	1000.10	38.6 QP	54.0	-15.4	1.49 V	195	11.80	26.80

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 77%RH	TESTED BY	Alan Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	274.39	38.4 QP	46.0	-7.6	1.00 H	351	24.70	13.70
2	359.77	39.3 QP	46.0	-6.7	1.00 H	115	23.20	16.10
3	466.49	37.2 QP	46.0	-8.8	2.00 H	161	18.50	18.70
4	600.38	39.7 QP	46.0	-6.3	1.50 H	336	18.20	21.50
5	734.27	38.7 QP	46.0	-7.3	1.25 H	148	15.30	23.40
6	868.15	37.1 QP	46.0	-8.9	1.50 H	70	11.60	25.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.18	28.5 QP	40.0	-11.5	1.24 V	242	14.90	13.60
2	274.39	31.3 QP	46.0	-14.7	1.49 V	316	17.60	13.70
3	359.77	37.5 QP	46.0	-8.5	1.24 V	344	21.40	16.10
4	600.38	36.8 QP	46.0	-9.2	1.00 V	314	15.30	21.50
5	800.24	37.2 QP	46.0	-8.8	1.24 V	137	12.60	24.60
6	976.82	33.4 QP	54.0	-20.6	1.00 V	99	6.90	26.50

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

#### Test Mode A~C (Tested Date: Nov. 21 ~ Nov. 22, 2012)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

### Test Mode D (Tested Date: Dec. 18, 2012)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 16, 2012	Nov. 15, 2013
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2012	Jul. 01, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 07, 2012	Feb. 06, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The test was performed in HwaYa Shielded Room 1.  
 3. The VCCI Site Registration No. is C-2040.

### 4.2.3 TEST PROCEDURES

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

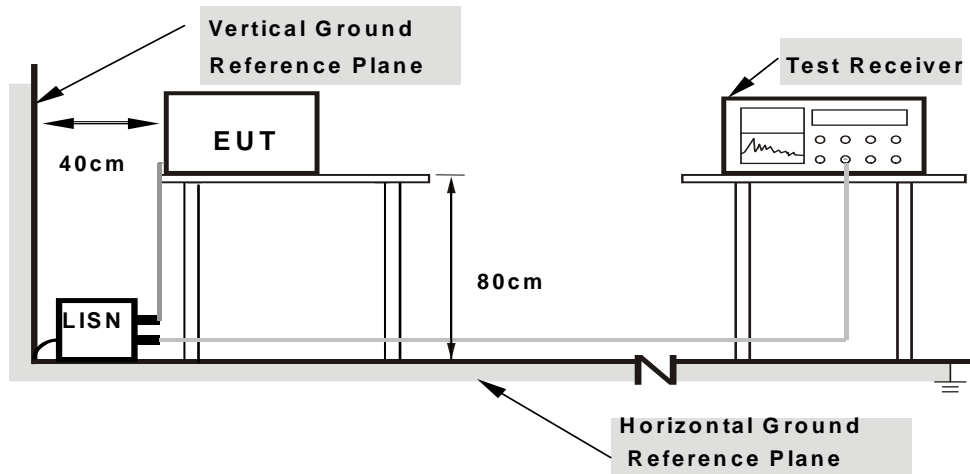
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



#### 4.2.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

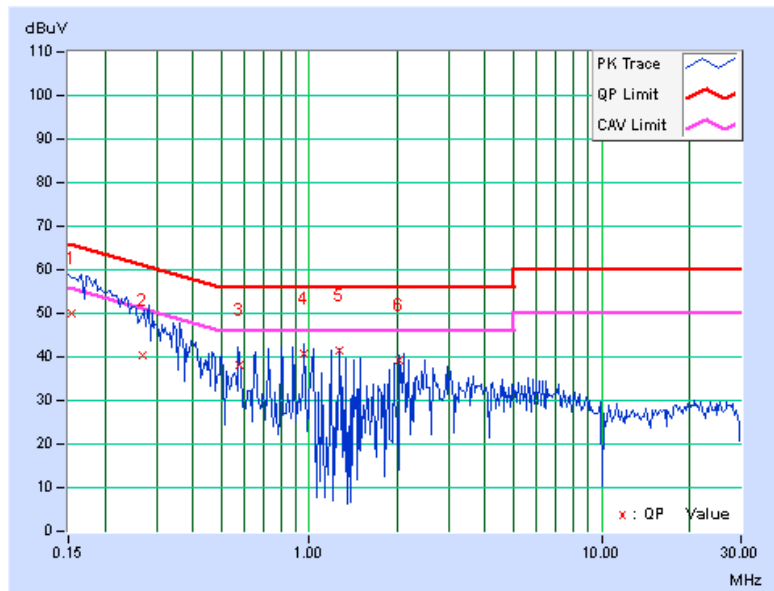
## 4.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA : 802.11n(20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15418	0.15	49.93	36.68	50.08	36.83	65.77	55.77	-15.69	-18.94
2	0.26756	0.16	40.16	32.56	40.32	32.72	61.19	51.19	-20.88	-18.48
3	0.57569	0.18	37.91	35.42	38.09	35.60	56.00	46.00	-17.91	-10.40
4	0.95859	0.19	40.70	37.09	40.89	37.28	56.00	46.00	-15.11	-8.72
5	1.26563	0.21	41.30	37.05	41.51	37.26	56.00	46.00	-14.49	-8.74
6	2.03125	0.26	38.83	34.04	39.09	34.30	56.00	46.00	-16.91	-11.70

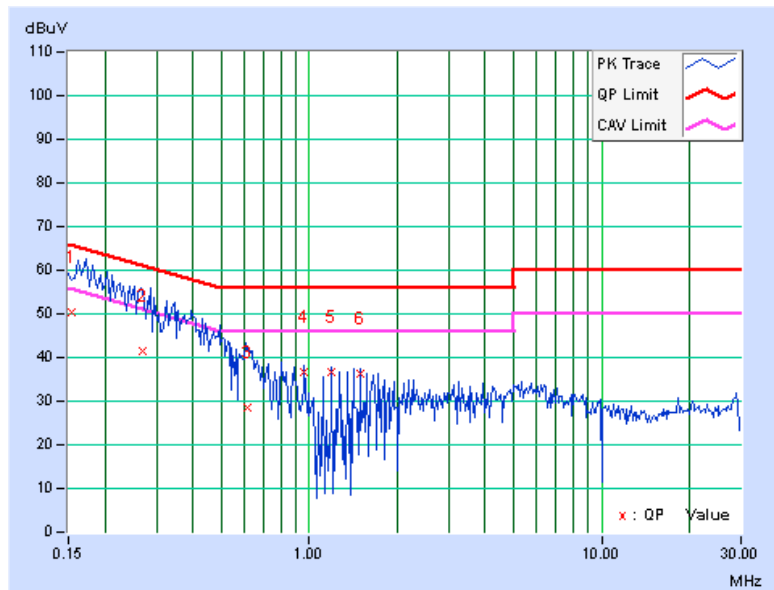
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15310	0.13	50.23	35.54	50.36	35.67	65.83	55.83	-15.47	-20.16
2	0.26766	0.15	41.34	28.55	41.49	28.70	61.19	51.19	-19.70	-22.49
3	0.61593	0.17	28.18	15.15	28.35	15.32	56.00	46.00	-27.65	-30.68
4	0.95859	0.19	36.49	31.80	36.68	31.99	56.00	46.00	-19.32	-14.01
5	1.19141	0.20	36.36	32.29	36.56	32.49	56.00	46.00	-19.44	-13.51
6	1.49609	0.22	36.15	33.33	36.37	33.55	56.00	46.00	-19.63	-12.45

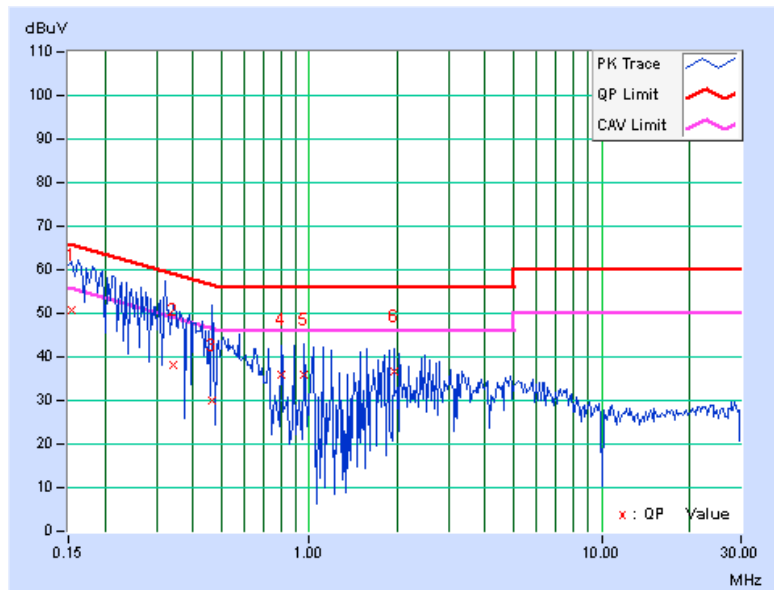
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15410	0.15	50.51	34.55	50.66	34.70	65.78	55.78	-15.12	-21.08
2	0.34475	0.16	38.14	33.51	38.30	33.67	59.09	49.09	-20.78	-15.41
3	0.46386	0.17	29.95	17.93	30.12	18.10	56.62	46.62	-26.50	-28.52
4	0.80625	0.18	35.91	33.77	36.09	33.95	56.00	46.00	-19.91	-12.05
5	0.95859	0.19	35.79	33.39	35.98	33.58	56.00	46.00	-20.02	-12.42
6	1.95703	0.26	36.55	33.67	36.81	33.93	56.00	46.00	-19.19	-12.07

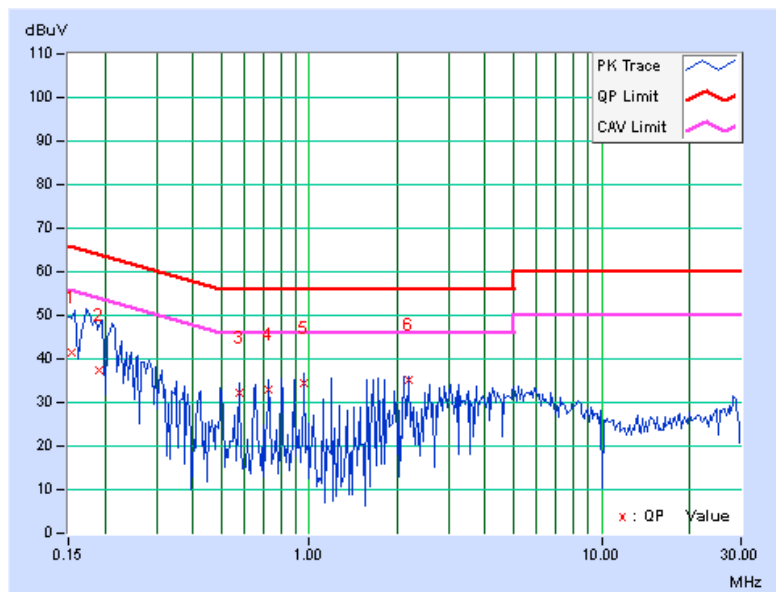
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15438	0.13	41.23	28.35	41.36	28.48	65.76	55.76	-24.40	-27.28
2	0.19090	0.14	37.39	27.06	37.53	27.20	64.00	54.00	-26.47	-26.80
3	0.57578	0.17	31.94	27.01	32.11	27.18	56.00	46.00	-23.89	-18.82
4	0.72813	0.18	32.84	27.74	33.02	27.92	56.00	46.00	-22.98	-18.08
5	0.95859	0.19	34.42	29.19	34.61	29.38	56.00	46.00	-21.39	-16.62
6	2.18750	0.27	35.00	30.82	35.27	31.09	56.00	46.00	-20.73	-14.91

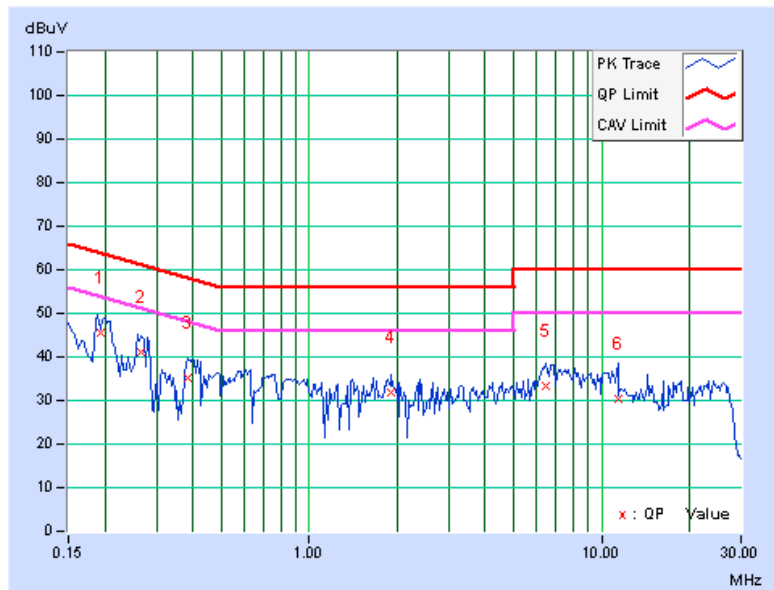
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19415	0.15	45.27	31.92	45.42	32.07	63.86	53.86	-18.44	-21.79
2	0.26719	0.16	40.86	28.29	41.02	28.45	61.20	51.20	-20.19	-22.76
3	0.38438	0.17	34.97	23.43	35.14	23.60	58.18	48.18	-23.05	-24.59
4	1.91406	0.25	31.75	17.65	32.00	17.90	56.00	46.00	-24.00	-28.10
5	6.47656	0.38	33.13	23.49	33.51	23.87	60.00	50.00	-26.49	-26.13
6	11.36719	0.46	29.93	22.95	30.39	23.41	60.00	50.00	-29.61	-26.59

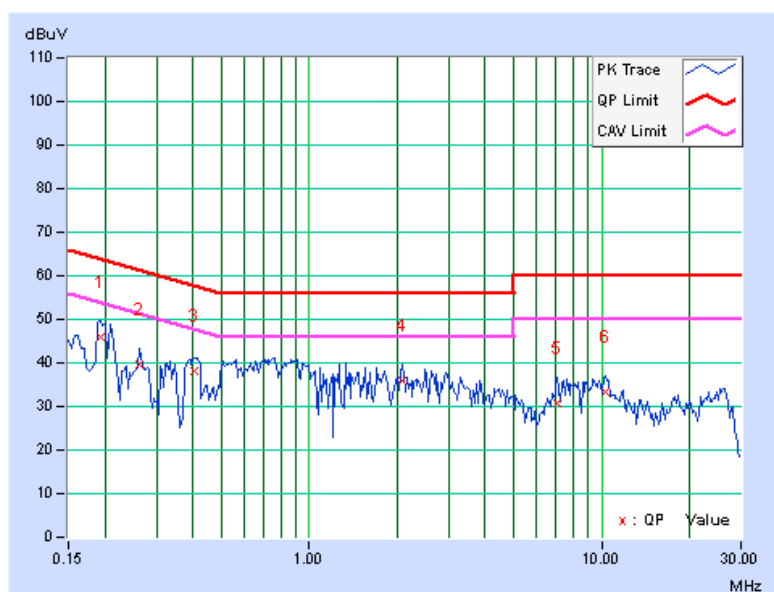
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.14	45.65	33.38	45.79	33.52	63.91	53.91	-18.12	-20.39
2	0.26328	0.15	39.50	30.03	39.65	30.18	61.33	51.33	-21.68	-21.15
3	0.40391	0.16	38.00	26.48	38.16	26.64	57.77	47.77	-19.61	-21.13
4	2.08203	0.26	35.49	23.35	35.75	23.61	56.00	46.00	-20.25	-22.39
5	7.08594	0.42	30.41	20.93	30.83	21.35	60.00	50.00	-29.17	-28.65
6	10.35156	0.49	32.92	25.94	33.41	26.43	60.00	50.00	-26.59	-23.57

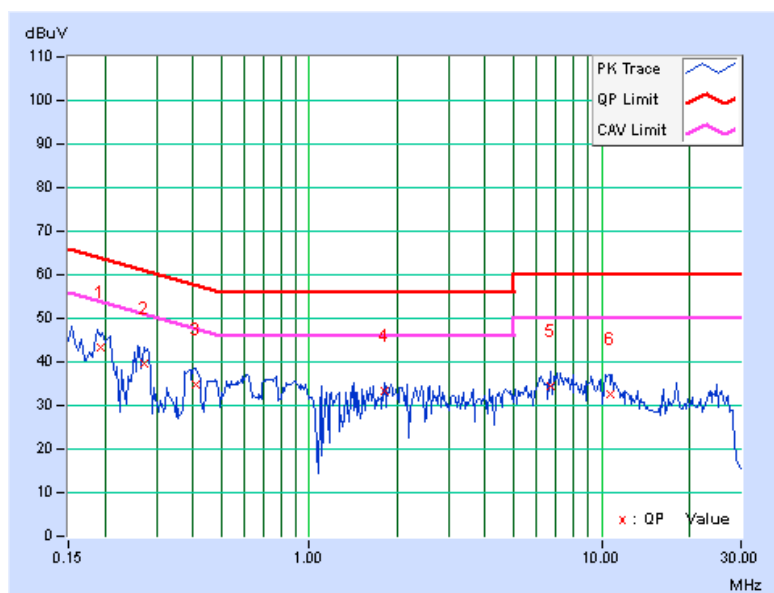
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19415	0.15	43.06	29.92	43.21	30.07	63.86	53.86	-20.65	-23.79
2	0.27109	0.16	39.38	27.09	39.54	27.25	61.08	51.08	-21.55	-23.84
3	0.40781	0.17	34.65	22.42	34.82	22.59	57.69	47.69	-22.87	-25.10
4	1.80469	0.25	32.91	19.29	33.16	19.54	56.00	46.00	-22.84	-26.46
5	6.66406	0.38	33.95	24.01	34.33	24.39	60.00	50.00	-25.67	-25.61
6	10.66797	0.44	32.32	26.12	32.76	26.56	60.00	50.00	-27.24	-23.44

- REMARKS:**
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  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.

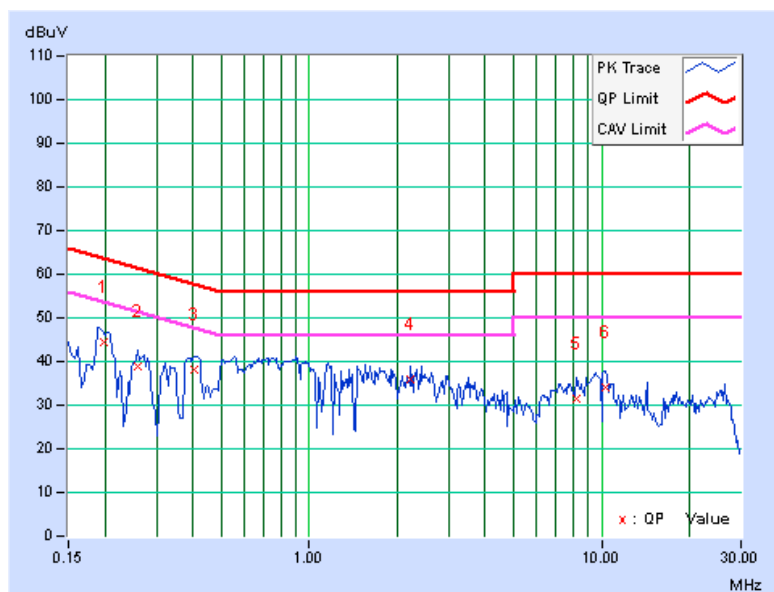




PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19796	0.14	44.19	32.55	44.33	32.69	63.70	53.70	-19.37	-21.01
2	0.25938	0.15	38.82	30.10	38.97	30.25	61.45	51.45	-22.49	-21.21
3	0.40391	0.16	38.17	26.60	38.33	26.76	57.77	47.77	-19.44	-21.01
4	2.22266	0.27	35.59	23.86	35.86	24.13	56.00	46.00	-20.14	-21.87
5	8.21094	0.44	31.15	22.91	31.59	23.35	60.00	50.00	-28.41	-26.65
6	10.28125	0.49	33.51	26.30	34.00	26.79	60.00	50.00	-26.00	-23.21

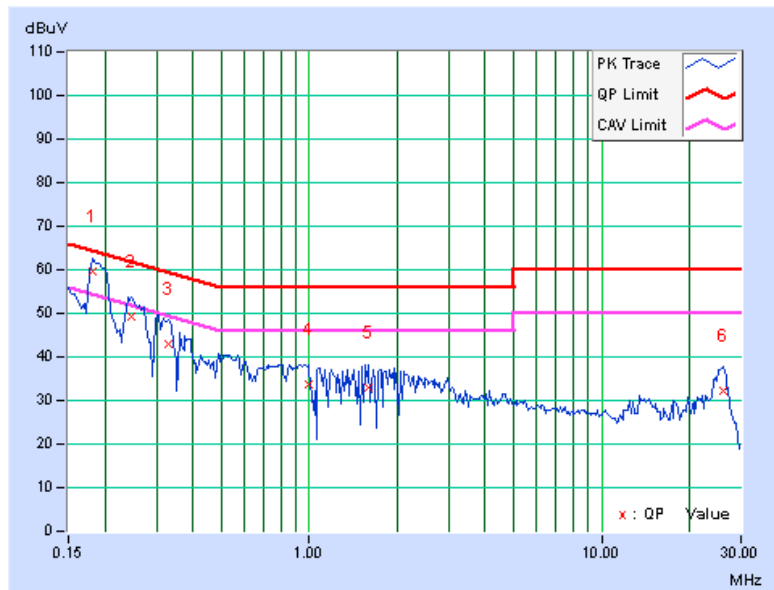
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	C

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.15	59.31	41.02	59.46	41.17	64.43	54.43	-4.97	-13.26
2	0.24766	0.15	49.29	34.88	49.44	35.03	61.84	51.84	-12.39	-16.80
3	0.32969	0.16	42.68	27.24	42.84	27.40	59.46	49.46	-16.62	-22.06
4	0.99375	0.19	33.50	19.64	33.69	19.83	56.00	46.00	-22.31	-26.17
5	1.58984	0.23	32.69	20.29	32.92	20.52	56.00	46.00	-23.08	-25.48
6	25.97656	0.57	31.83	24.01	32.40	24.58	60.00	50.00	-27.60	-25.42

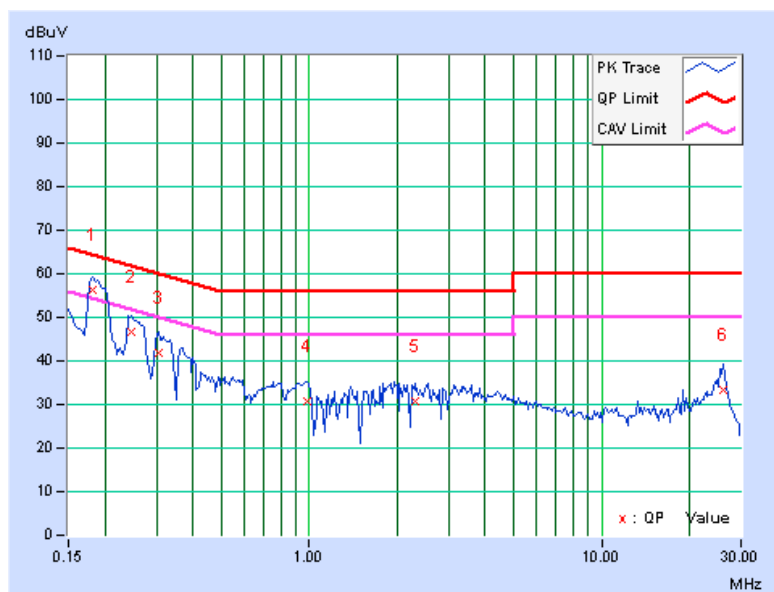
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	C

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.14	56.21	38.04	56.35	38.18	64.43	54.43	-8.08	-16.25
2	0.24766	0.14	46.54	31.81	46.68	31.95	61.84	51.84	-15.15	-19.88
3	0.30625	0.15	41.74	26.11	41.89	26.26	60.07	50.07	-18.18	-23.81
4	0.97813	0.19	30.56	16.53	30.75	16.72	56.00	46.00	-25.25	-29.28
5	2.29688	0.27	30.32	19.47	30.59	19.74	56.00	46.00	-25.41	-26.26
6	26.05859	0.61	32.55	24.71	33.16	25.32	60.00	50.00	-26.84	-24.68

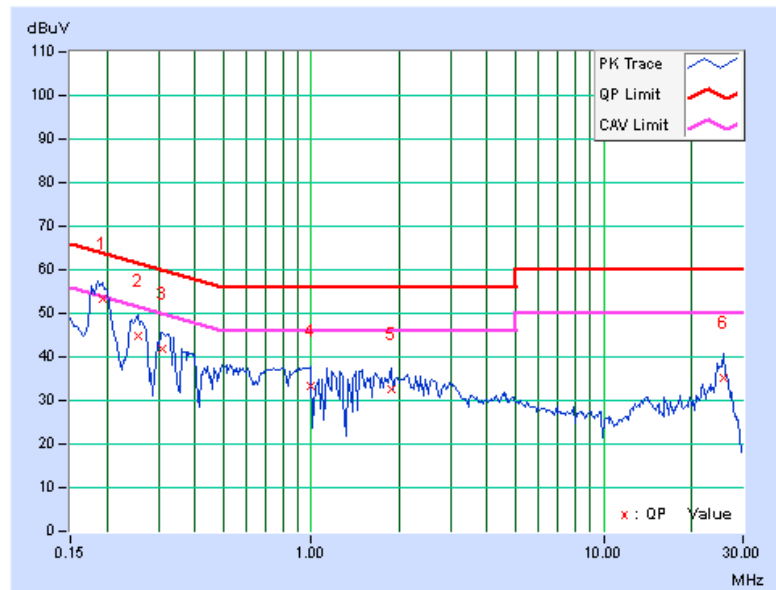
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	C

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.15	53.24	38.83	53.39	38.98	63.91	53.91	-10.52	-14.93
2	0.25547	0.16	44.67	30.86	44.83	31.02	61.58	51.58	-16.75	-20.56
3	0.31016	0.16	41.56	27.35	41.72	27.51	59.97	49.97	-18.25	-22.46
4	0.99766	0.19	33.32	19.07	33.51	19.26	56.00	46.00	-22.49	-26.74
5	1.87891	0.25	32.26	21.14	32.51	21.39	56.00	46.00	-23.49	-24.61
6	25.69531	0.57	34.75	27.00	35.32	27.57	60.00	50.00	-24.68	-22.43

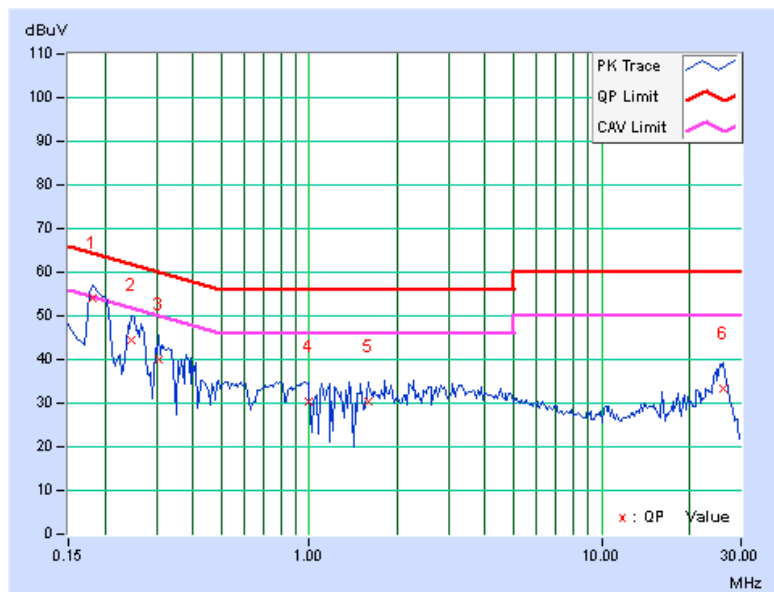
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	C

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.14	53.83	35.91	53.97	36.05	64.43	54.43	-10.46	-18.38
2	0.24766	0.14	44.37	30.04	44.51	30.18	61.84	51.84	-17.32	-21.65
3	0.30625	0.15	39.78	24.63	39.93	24.78	60.07	50.07	-20.14	-25.29
4	0.98984	0.19	30.35	16.72	30.54	16.91	56.00	46.00	-25.46	-29.09
5	1.59375	0.23	30.12	17.05	30.35	17.28	56.00	46.00	-25.65	-28.72
6	26.17969	0.61	32.87	25.30	33.48	25.91	60.00	50.00	-26.52	-24.09

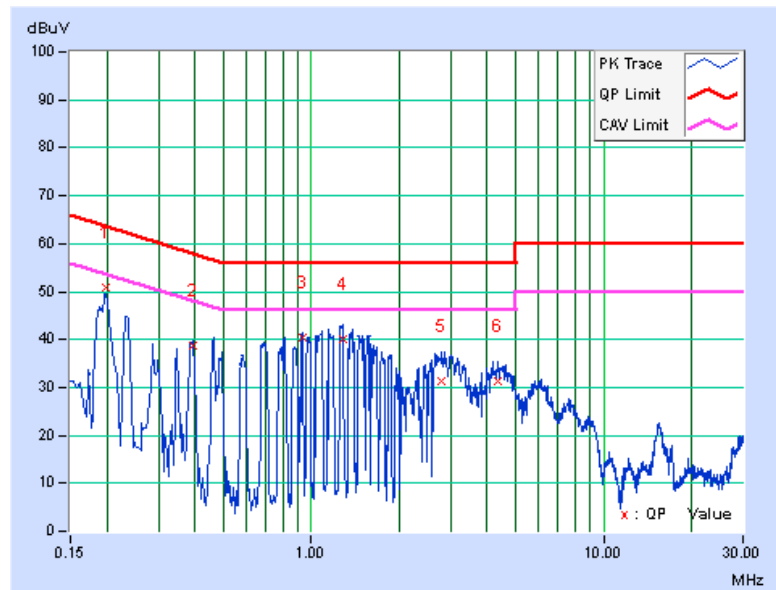
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	D

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19717	0.13	50.66	45.13	50.79	45.26	63.73	53.73	-12.94	-8.47
2	0.39531	0.13	38.65	33.41	38.78	33.54	57.95	47.95	-19.17	-14.41
3	0.93568	0.18	40.37	26.98	40.55	27.16	56.00	46.00	-15.45	-18.84
4	1.28703	0.20	39.81	24.21	40.01	24.41	56.00	46.00	-15.99	-21.59
5	2.78925	0.27	31.13	10.91	31.40	11.18	56.00	46.00	-24.60	-34.82
6	4.34934	0.36	30.97	15.44	31.33	15.80	56.00	46.00	-24.67	-30.20

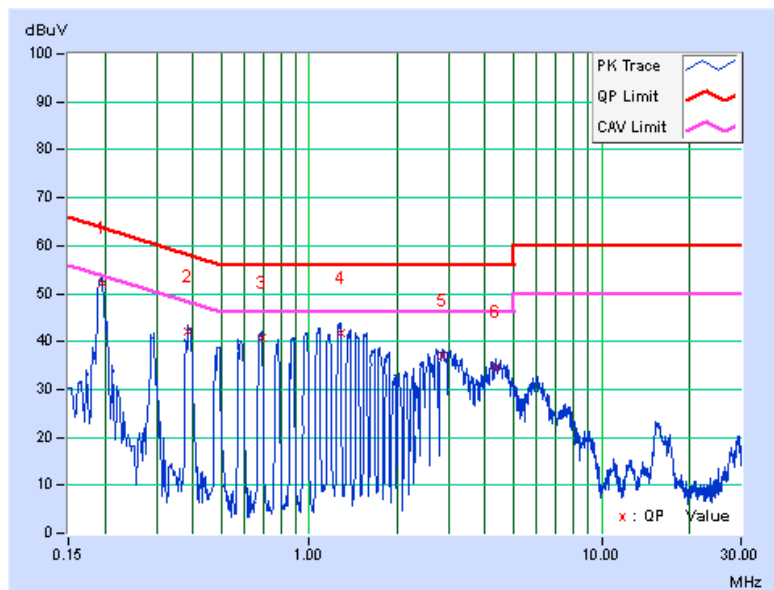
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	D

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19692	0.14	52.04	47.20	52.18	47.34	63.74	53.74	-11.56	-6.40
2	0.38503	0.15	42.08	36.18	42.23	36.33	58.17	48.17	-15.94	-11.84
3	0.68926	0.18	40.69	33.00	40.87	33.18	56.00	46.00	-15.13	-12.82
4	1.27689	0.22	41.50	32.06	41.72	32.28	56.00	46.00	-14.28	-13.72
5	2.85968	0.28	36.68	20.14	36.96	20.42	56.00	46.00	-19.04	-25.58
6	4.33370	0.36	34.43	22.00	34.79	22.36	56.00	46.00	-21.21	-23.64

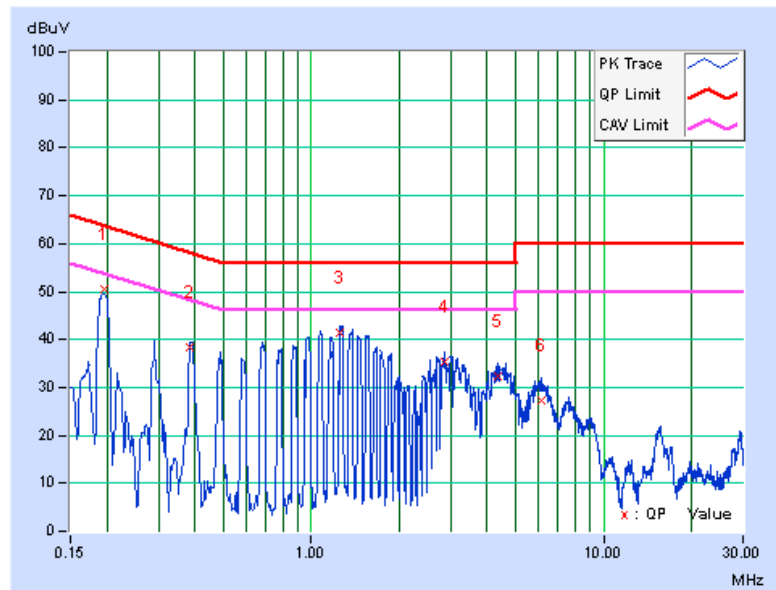
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	D

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19510	0.13	50.44	45.82	50.57	45.95	63.82	53.82	-13.25	-7.87
2	0.38503	0.13	38.31	32.83	38.44	32.96	58.17	48.17	-19.73	-15.21
3	1.25356	0.20	41.15	30.06	41.35	30.26	56.00	46.00	-14.65	-15.74
4	2.85968	0.27	35.10	16.38	35.37	16.65	56.00	46.00	-20.63	-29.35
5	4.34152	0.36	32.03	16.94	32.39	17.30	56.00	46.00	-23.61	-28.70
6	6.12057	0.45	26.82	9.61	27.27	10.06	60.00	50.00	-32.73	-39.94

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction Factor + Reading Value.

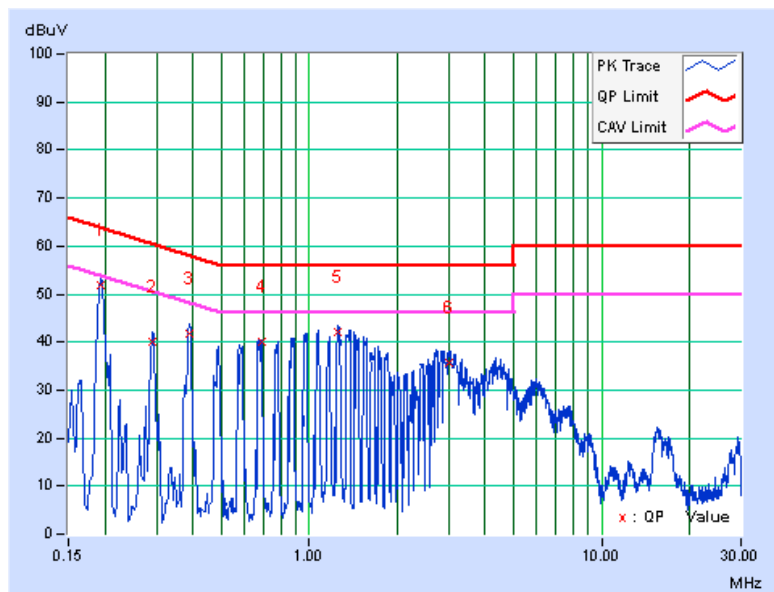




PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	D

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19305	0.14	51.81	47.72	51.95	47.86	63.90	53.90	-11.96	-6.05
2	0.29120	0.14	40.03	34.06	40.17	34.20	60.49	50.49	-20.32	-16.29
3	0.38851	0.15	41.65	39.54	41.80	39.69	58.10	48.10	-16.30	-8.41
4	0.68926	0.18	39.97	29.08	40.15	29.26	56.00	46.00	-15.85	-16.74
5	1.24480	0.21	41.81	26.81	42.02	27.02	56.00	46.00	-13.98	-18.98
6	3.00039	0.29	35.42	19.24	35.71	19.53	56.00	46.00	-20.29	-26.47

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction Factor + Reading Value.



### 4.3 PEAK TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

**NOTE:** Where B is the 26dB emission bandwidth in MHz.

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

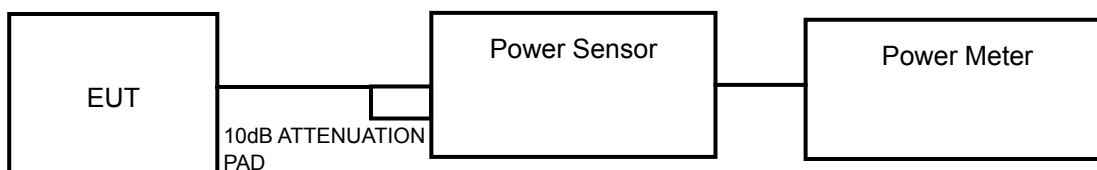
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

Array Gain =  $5 \log(NANT/NSS)$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $NANT \geq 5$ .

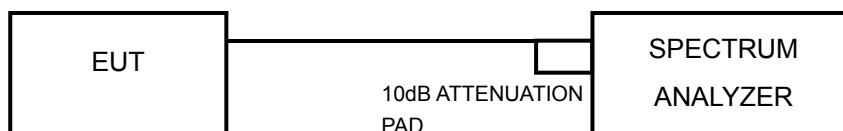
For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  dB.

#### 4.3.2 TEST SETUP

##### FOR POWER OUTPUT MEASUREMENT



##### FOR 26dB BANDWIDTH



#### 4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.3.4 TEST PROCEDURE

##### FOR AVERAGE POWER MEASUREMENT

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

##### FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

#### 4.3.7 TEST RESULTS

##### POWER OUTPUT: 802.11a

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)				TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3				
36	5180	9.84	9.74	9.96	9.85	38.626	15.87	17	PASS
40	5200	10.54	9.98	10.64	10.72	44.669	16.50	17	PASS
48	5240	10.64	10.10	10.48	10.88	45.236	16.55	17	PASS
52	5260	17.10	16.73	16.53	17.26	196.573	22.94	24	PASS
60	5300	17.11	16.62	16.34	17.30	194.080	22.88	24	PASS
64	5320	17.23	16.83	16.56	17.33	200.405	23.02	24	PASS
100	5500	15.29	15.43	15.43	15.07	135.771	21.33	24	PASS
116	5580	16.66	16.56	17.02	17.50	198.219	22.97	24	PASS
140	5700	16.56	16.69	17.22	17.42	199.887	23.01	24	PASS

##### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)				TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3				
36	5180	10.23	9.33	9.64	10.95	40.763	16.10	17	PASS
40	5200	10.39	10.10	10.36	11.02	44.684	16.50	17	PASS
48	5240	10.45	10.23	10.53	11.08	45.757	16.60	17	PASS
52	5260	16.90	16.83	17.25	17.83	210.935	23.24	24	PASS
60	5300	17.13	16.93	17.00	17.42	206.286	23.14	24	PASS
64	5320	17.02	16.66	16.79	17.68	203.062	23.08	24	PASS
100	5500	15.96	16.28	16.25	16.47	168.439	22.26	24	PASS
116	5580	17.05	16.96	17.35	17.46	210.402	23.23	24	PASS
140	5700	15.12	15.84	15.56	16.74	154.061	21.88	24	PASS

### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)				TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3				
38	5190	10.97	11.00	10.94	10.87	49.727	16.97	17	PASS
46	5230	11.00	11.20	10.91	10.65	49.717	16.97	17	PASS
54	5270	17.96	17.84	18.04	17.71	246.031	23.91	24	PASS
62	5310	14.34	14.71	13.94	14.41	109.124	20.38	24	PASS
102	5510	12.39	12.27	12.35	12.41	68.801	18.38	24	PASS
110	5550	18.17	17.85	17.92	17.51	244.877	23.89	24	PASS
134	5670	18.04	17.49	18.01	17.95	245.399	23.90	24	PASS

## 26dB BANDWIDTH:

### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
36	5180	24.22	24.32	25.18	26.36	PASS
40	5200	24.22	24.63	25.52	26.48	PASS
48	5240	24.52	24.74	25.45	26.46	PASS
52	5260	25.23	24.86	25.68	26.50	PASS
60	5300	25.22	25.13	25.71	26.47	PASS
64	5320	25.14	25.02	25.73	26.50	PASS
100	5500	19.97	20.36	20.75	20.87	PASS
116	5580	24.94	24.76	25.79	26.31	PASS
140	5700	24.17	24.89	25.53	25.80	PASS

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
36	5180	27.29	27.63	26.46	26.10	PASS
40	5200	27.42	28.12	26.57	26.61	PASS
48	5240	27.43	27.62	26.48	25.83	PASS
52	5260	27.47	28.29	26.39	25.79	PASS
60	5300	27.69	28.52	27.01	26.56	PASS
64	5320	27.47	28.69	27.06	25.96	PASS
100	5500	23.44	22.28	22.58	21.92	PASS
116	5580	27.45	28.14	27.17	26.40	PASS
140	5700	22.53	21.82	21.70	21.68	PASS

**A D T****802.11n (40MHz)**

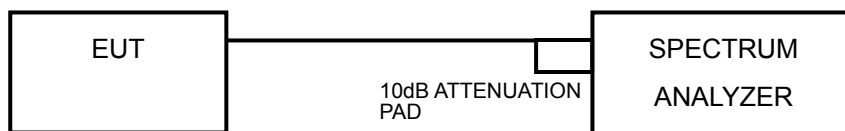
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)				PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	
38	5190	44.18	43.41	44.12	43.65	PASS
46	5230	43.84	43.01	44.02	42.77	PASS
54	5270	44.68	44.50	45.09	45.56	PASS
62	5310	44.15	43.54	43.49	43.70	PASS
102	5510	44.05	43.58	44.17	43.59	PASS
110	5550	44.41	43.81	43.67	44.41	PASS
134	5670	44.46	43.92	44.38	43.72	PASS

## 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.4.4 TEST PROCEDURES

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 KHz, Set VBW  $\geq$  1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value

### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.



#### 4.4.7 TEST RESULTS

##### 802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
36	5180	-2.33	-3.09	-2.83	-1.93	3.50	3.88	PASS
40	5200	-2.54	-2.43	-2.26	-2.07	3.70	3.88	PASS
48	5240	-2.29	-2.97	-2.43	-1.78	3.67	3.88	PASS
52	5260	3.62	3.46	3.22	3.92	9.58	10.88	PASS
60	5300	4.15	3.44	3.41	4.00	9.78	10.88	PASS
64	5320	4.13	3.27	3.59	4.48	9.91	10.88	PASS
100	5500	2.77	2.88	2.89	2.47	8.78	10.18	PASS
116	5580	3.15	3.80	3.62	4.23	9.74	10.18	PASS
140	5700	2.76	2.86	3.63	3.99	9.36	10.18	PASS

**NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

**2. For 5180~5240MHz:**

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(6.12-6) = 3.88\text{dBm}$ .

**For 5260~5320MHz:**

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.12-6) = 10.88\text{dBm}$ .

**For 5500~5700MHz:**

Directional gain =  $0.8\text{dBi} + 10\log(4) = 6.82\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.82-6) = 10.18\text{dBm}$ .

### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
36	5180	-3.01	-3.12	-2.61	-2.13	3.32	3.88	PASS
40	5200	-2.68	-2.82	-2.61	-1.83	3.55	3.88	PASS
48	5240	-2.48	-2.99	-2.62	-1.52	3.65	3.88	PASS
52	5260	3.65	3.41	3.62	4.43	9.82	10.88	PASS
60	5300	3.54	3.39	3.51	4.38	9.74	10.88	PASS
64	5320	3.96	3.16	3.96	4.70	10.00	10.88	PASS
100	5500	2.63	2.95	2.88	2.93	8.87	10.18	PASS
116	5580	3.40	3.01	3.62	4.12	9.58	10.18	PASS
140	5700	1.84	2.64	2.45	3.38	8.63	10.18	PASS

**NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

**2. For 5180~5240MHz:**

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(6.12-6) = 3.88\text{dBm}$ .

**For 5260~5320MHz:**

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.12-6) = 10.88\text{dBm}$ .

**For 5500~5700MHz:**

Directional gain =  $0.8\text{dBi} + 10\log(4) = 6.82\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.82-6) = 10.18\text{dBm}$ .

## 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)				TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3			
38	5190	-4.17	-4.25	-4.86	-4.24	1.65	3.88	PASS
46	5230	-4.33	-4.33	-4.64	-4.15	1.66	3.88	PASS
54	5270	2.71	2.65	2.97	2.58	8.75	10.88	PASS
62	5310	-1.59	-2.60	-3.00	-2.37	3.66	10.88	PASS
102	5510	-3.27	-4.19	-3.96	-4.09	2.16	10.18	PASS
110	5550	3.24	2.63	2.70	3.00	8.92	10.18	PASS
134	5670	1.95	2.38	2.35	3.35	8.56	10.18	PASS

**NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

### 2. For 5190~5230MHz:

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(6.12-6) = 3.88\text{dBm}$ .

### For 5270~5310MHz:

Directional gain =  $0.1\text{dBi} + 10\log(4) = 6.12\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.12-6) = 10.88\text{dBm}$ .

### For 5510~5670MHz:

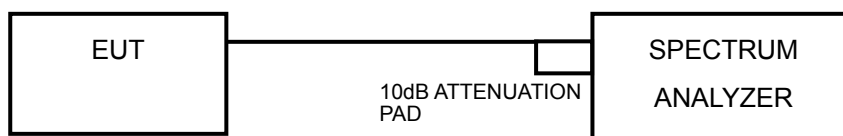
Directional gain =  $0.8\text{dBi} + 10\log(4) = 6.82\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.82-6) = 10.18\text{dBm}$ .

## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- 1) Set RBW = 1 MHz, VBW  $\geq$  3 MHz, Detector = peak.
- 2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- 3) Use the peak search function to find the peak of the spectrum.
- 4) Measure the PPSD.
- 5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

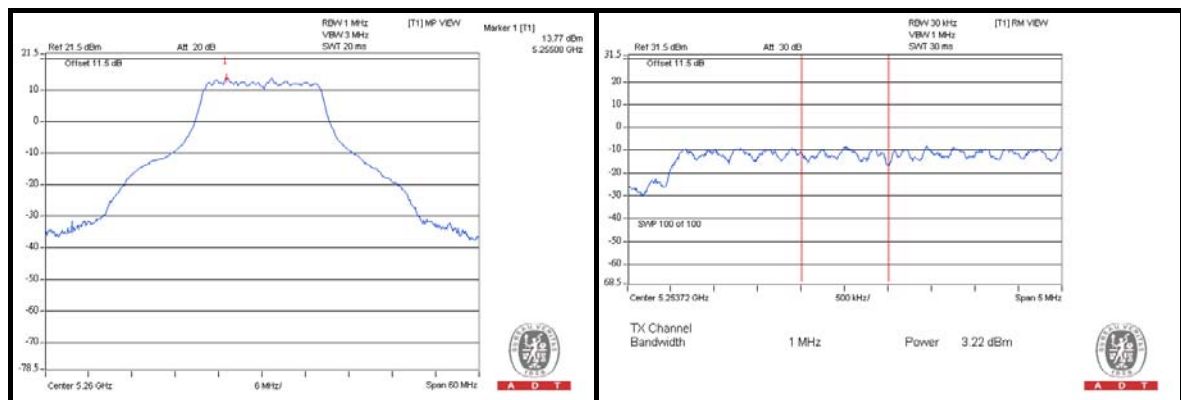
### 4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

## 4.5.7 TEST RESULTS

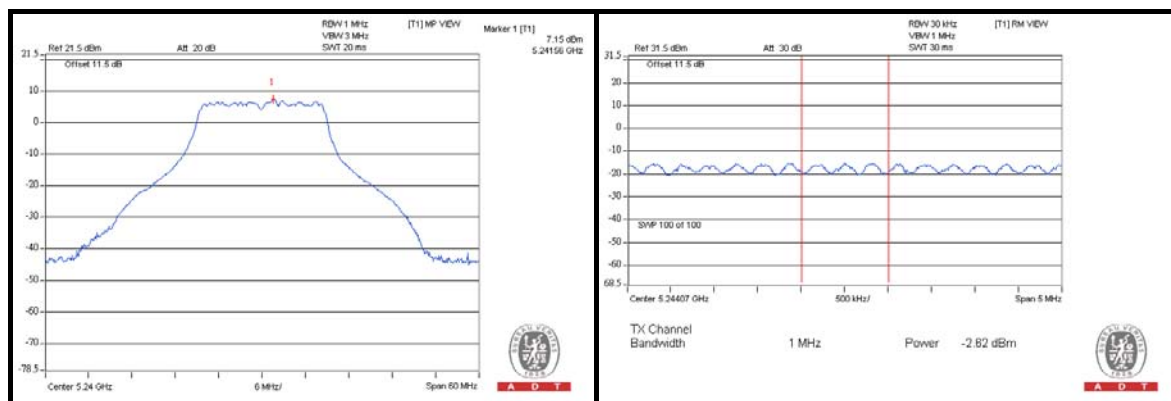
### 802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)				PPSD (dBm)				PEAK EXCURSION (dB)				LIMIT (dB)	PASS /FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
36	5180	7.36	6.47	6.82	7.23	-2.33	-3.09	-2.83	-1.93	9.69	9.56	9.65	9.16	13	PASS
40	5200	7.24	6.89	7.91	7.83	-2.54	-2.43	-2.26	-2.07	9.78	9.32	10.17	9.90	13	PASS
48	5240	7.37	6.66	7.23	7.48	-2.29	-2.97	-2.43	-1.78	9.66	9.63	9.66	9.26	13	PASS
52	5260	13.56	12.97	13.77	13.66	3.62	3.46	3.22	3.92	9.94	9.51	10.55	9.74	13	PASS
60	5300	13.46	13.03	13.05	13.17	4.15	3.44	3.41	4.00	9.31	9.59	9.64	9.17	13	PASS
64	5320	13.45	12.88	12.91	13.70	4.13	3.27	3.59	4.48	9.32	9.61	9.32	9.22	13	PASS
100	5500	10.67	11.59	11.50	11.30	2.77	2.88	2.89	2.47	7.90	8.71	8.61	8.83	13	PASS
116	5580	12.67	13.28	13.50	13.23	3.15	3.80	3.62	4.23	9.52	9.48	9.88	9.00	13	PASS
140	5700	12.68	12.96	13.49	13.11	2.76	2.86	3.63	3.99	9.92	10.10	9.86	9.12	13	PASS



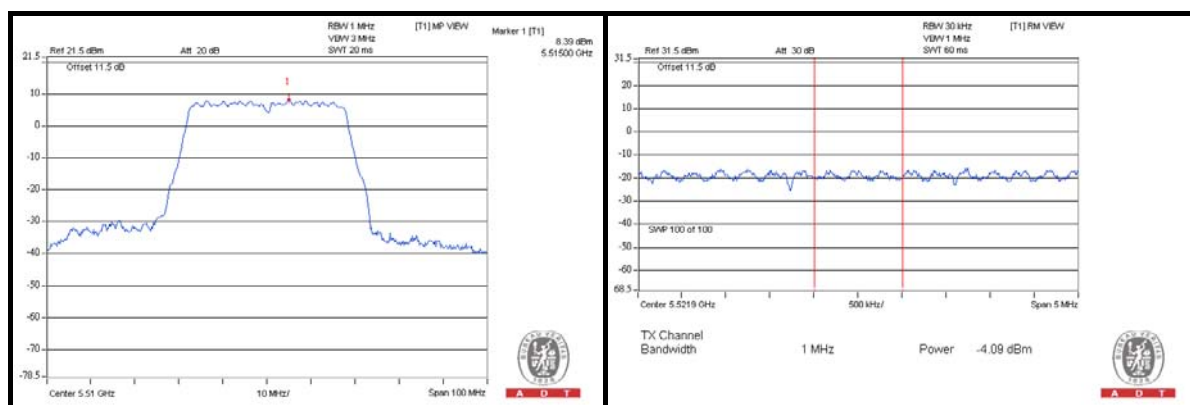
# 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)				PPSD (dBm)				PEAK EXCURSION (dB)				LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
36	5180	5.65	5.26	6.39	6.85	-3.01	-3.12	-2.61	-2.13	8.66	8.38	9.00	8.98	13	PASS
40	5200	5.92	5.53	6.21	7.29	-2.68	-2.82	-2.61	-1.83	8.60	8.35	8.82	9.12	13	PASS
48	5240	6.07	5.49	7.15	7.31	-2.48	-2.99	-2.62	-1.52	8.55	8.48	9.77	8.83	13	PASS
52	5260	12.68	11.77	12.40	13.50	3.65	3.41	3.62	4.43	9.03	8.36	8.78	9.07	13	PASS
60	5300	12.31	11.78	12.35	13.31	3.54	3.39	3.51	4.38	8.77	8.39	8.84	8.93	13	PASS
64	5320	12.44	11.59	12.70	13.52	3.96	3.16	3.96	4.70	8.48	8.43	8.74	8.82	13	PASS
100	5500	9.69	9.34	9.74	10.13	2.63	2.95	2.88	2.93	7.06	6.39	6.86	7.20	13	PASS
116	5580	11.66	11.49	12.24	13.24	3.40	3.01	3.62	4.12	8.26	8.48	8.62	9.12	13	PASS
140	5700	9.35	8.58	9.44	10.13	1.84	2.64	2.45	3.38	7.51	5.94	6.99	6.75	13	PASS



# 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)				PPSD (dBm)				PEAK EXCURSION (dB)				LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 3		
38	5190	7.67	8.08	7.47	8.17	-4.17	-4.25	-4.86	-4.24	11.84	12.33	12.33	12.41	13	PASS
46	5230	3.43	3.99	4.13	4.03	-4.33	-4.33	-4.64	-4.15	7.76	8.32	8.77	8.18	13	PASS
54	5270	10.70	11.30	10.56	11.75	2.71	2.65	2.97	2.58	7.99	8.65	7.59	9.17	13	PASS
62	5310	9.45	9.73	8.87	9.99	-1.59	-2.60	-3.00	-2.37	11.04	12.33	11.87	12.36	13	PASS
102	5510	8.40	8.12	7.67	8.39	-3.27	-4.19	-3.96	-4.09	11.67	12.31	11.63	12.48	13	PASS
110	5550	9.89	10.48	9.72	11.18	3.24	2.63	2.70	3.00	6.65	7.85	7.02	8.18	13	PASS
134	5670	8.61	9.71	8.14	9.13	1.95	2.38	2.35	3.35	6.66	7.33	5.79	5.78	13	PASS

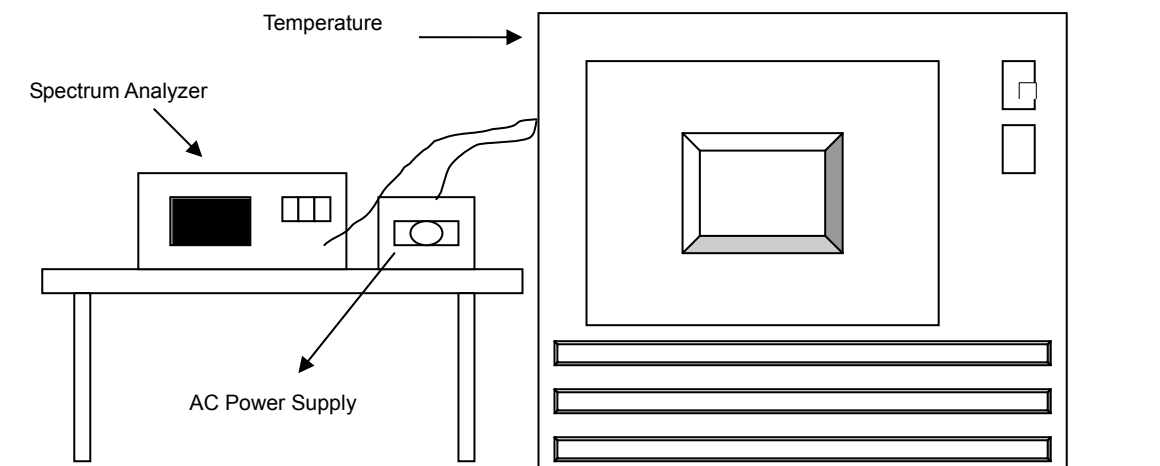


## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.



#### 4.6.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.

#### 4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	5320.0127	0.00024	5320.0064	0.00012	5320.0117	0.00022	5320.0047	0.00009
40	120	5319.9737	-0.00049	5319.9717	-0.00053	5319.9724	-0.00052	5319.9767	-0.00044
30	120	5320.0149	0.00028	5320.0159	0.00030	5320.0118	0.00022	5320.0118	0.00022
20	120	5319.9798	-0.00038	5319.9728	-0.00051	5319.9786	-0.00040	5319.9797	-0.00038
10	120	5319.9800	-0.00038	5319.9858	-0.00027	5319.9822	-0.00033	5319.9768	-0.00044
0	120	5320.0154	0.00029	5320.0122	0.00023	5320.0158	0.00030	5320.0158	0.00030
-10	120	5319.9977	-0.00004	5319.9979	-0.00004	5319.9944	-0.00011	5320.0002	0.00000
-20	120	5319.9864	-0.00026	5319.9921	-0.00015	5319.9916	-0.00016	5319.9896	-0.00020

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	138	5319.9787	-0.00040	5319.9735	-0.00050	5319.9788	-0.00040	5319.9793	-0.00039
	120	5319.9798	-0.00038	5319.9728	-0.00051	5319.9786	-0.00040	5319.9797	-0.00038
	102	5319.9781	-0.00041	5319.9742	-0.00048	5319.9783	-0.00041	5319.9788	-0.00040

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

## 6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety Telecom Lab:**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

## **7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

**---END---**